Priority Research Direction: Accelerator Science

Key emerging challenges

- Storing/sharing/analyzing data from accelerator experiments *(supply hard numbers later)*
  - user facilities: light sources, colliders,…
  - beam physics expts: laser-plasma accelerators,…
- Real-time feedback to experiments
- Collaborative facility design

Summary of research direction

- Data storage, high speed networks
- Parallel scalable I/O, data analysis, and vis
- Improved collaboration tools to support sharing/exploring large data sets, more telepresence-like interaction

Potential impact on software/systems

- Broad impact to range of fields involving large-scale scientific experiments producing vast amounts of data

Potential impact on science communities or DOE capabilities

- Extreme amounts of data are coming in from light sources, neutron sources, colliders, radioactive beam facilities – these are crucial to advances in materials science, chemistry, bioscience, high energy physics, nuclear physics
- Improved collaboration tools will help the nation's/world's best accelerator physicists work together to design future facilities